JOINT

PATENT APPLICATION

FOR

UNITED STATES LETTERS PATENT

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

BE IT KNOWN, that we, **Clifford Sosin** and **Howard B. Sosin** both of Fairfield, CT, have invented certain new and useful improvements in TRANSFERABLE SKI BINDING of which the following is a specification:

Express Mail No. EL674750983US

Transferable Ski Binding

This application claims priority from U.S. Provisional Application Ser. No. 60/269,490 filed on February 16, 2001, the teachings of which are hereby incorporated by reference.

Field of Invention

The present invention is directed towards a method and apparatus for allowing bindings to be easily transferred between skis, snowboards, snowshoes or any other similar types of equipment that require the attachment of boots.

Background of the Invention

When skiing, snowboarding, or snowshoeing the user wears special boots that have soles specifically designed to attach to a binding. Before accepting the boot, the binding has been attached to the ski, snowboard or snowshoe. The connection between the boot and the binding is designed for ease of entry, and, in the case of skis, quick release when there is adverse twisting (i.e. a fall, etc.). The connection is extremely important for safety and is customized to the user's boot size and shape, and his weight and skill level.

The connection between the binding and the ski (hereinafter ski is used generically to represent skis, snowboards, snowshoes or other similar types of equipment that require the attachment of boots, and, skier is used generically to mean user) is relatively permanent and most often made by screws that are drilled into the skis. Currently, transferring bindings from one ski to another is time consuming and difficult and can significantly damage a ski.

Skis, boots and bindings are each relatively expensive. Skiers often have one primary set of boots that they transfer between one or more sets of skis. Each set of skis,

however, is typically mounted with bindings that are then adjusted to fit the skier. With transferable bindings a skier could choose to own a single set of bindings for use with multiple pairs of skis.

With the prior art, the purchase of skis can be a time consuming process as one must choose both skis and bindings, have the bindings mounted to the skis, and have the bindings adjusted to the skier's boots and skill level. Additionally, with conventional bindings, if a skier wishes to "demo" a ski prior to purchase, the potential buyer must first carefully adjust the binding in order to conform to his boot, weight and skill level. This can be a time consuming process. Similarly, renting skis can be problematic. Some skiers own boots, others rent. In either case, each time a skier rents skis, the bindings on the rental skis must be adjusted to the skier's boot size, weight and skill level. With a transferable binding, "demo-ing" or renting skis would be much easier.

Skiers occasionally fall and break a ski. Rather then having to make their way down the mountain on one ski, or be brought down the mountain in a toboggan, if the skier had a transferable binding he could be brought virtually any ski that would accept that binding, transfer the binding from his broken ski, and proceed down the mountain.

Skiers sometimes have multiple uses for skis that require different bindings. Transferable bindings would allow the skier to use one pair of skis in multiple ways (e.g. telemark and alpine skiing).

Thus, there is a need for a system to facilitate the easy transference of bindings between sets of skis.

Summary of the Invention

The present invention allows a skier to easily transfer a single set of bindings between skis. The invention consists of two mechanisms that can be interlocked, affixed

or otherwise attached together, hereinafter called the "ship mechanism" or "ship" and the "dock mechanism" or "dock"

The "ship" is a standardized mechanism (most likely, but not necessarily, made of metal or some other rigid material such as plastic or a composite material) to which the binding is affixed. As bindings may differ, the actual procedure and mechanism required to mount the binding to the ship may vary. It will be apparent to those skilled in the art how this can be done.

In one aspect of the invention, the ship could be sold separately from the binding, which would require the buyer or the ski shop to attach them. This would allow holders of prior art bindings to incorporate them into ships that could be attached on docks of skis. Alternatively, in another aspect, the binding and the ship could be produced and sold as an integral unit.

The "dock" is a mechanism that is affixed to the ski and adapted to receive the ship. In one aspect, the dock will be made of metal or other rigid material such as plastic or a composite material and will be permanently affixed to the ski. The manufacturer could do this at the time of production and thus the dock could be an integral part of the ski. Alternatively, the dock could be produced and sold separately from the ski and the skier or the ski shop could mount it at the time of purchase. Although not mechanically necessary, it is economically desirable that the dock be as simple, standard and inexpensive as possible.

Those skilled in the art will realize that there are many alternative ways to join the ship and the dock. Without in any way limiting the possible joining mechanisms, in one aspect of the invention, screws, wing-nuts or other attaching mechanisms would join the ship and dock. These would hold tight but could be easily unscrewed. The screws, wing-nuts, or other attaching devices, could be configured to be as unobtrusive as possible. In another aspect, the dock could raised have edges to form pockets or slots that allow various sides of the ship to slide under overhanging portions of the dock and then

be attached. In yet another aspect, the ship could enter the dock at an angle (for example, 90 degrees) to its ultimate alignment and in the process of rotating into position, the ship could be locked down. Removing the ship from the dock would require releasing the locking mechanism, which could be effected by a spring release button mechanism. To further ensure that ships do not separate from docks, the surfaces could be frictionally-rough, adhere to one another by means of adhesive, and/or could be joined by interlocking teeth.

Brief Description of the Drawing

The invention is described with reference to the several figures of the drawing, in which:

Figure 1 is a perspective view of one embodiment of an assembled invention including ski, dock, ship, binding and boot;

Figures 2A-2E are schematic illustrations of the assembly of one embodiment of the invention;

Figures 3A - 3C are perspective views showing a slotted dock in which a ship, configured for this type of dock, could be inserted in a direction perpendicular to the ski.;

Figure 4A - 4C are perspective views showing a slotted dock in which a ship, configured for this type of dock, could be inserted in a direction parallel to the ski;

Figure 5 is a perspective view showing a dock in which a ship can be inserted at an angle and then rotated into position;

Figure 6 is a perspective view of a spring-loaded dock;

Figure 7 is a cross-sectional view of a ship and dock with attachment enhancing surfaces;

Figure 8A is a perspective view of a binding that is integral to the ship;

Figure 8B shows a binding that is separate from the ship;

Figure 9A is a perspective view of a dock that is integral to the ski;

Figure 9B shows dock that is separate from the ski;

Figures 10A and **10B** illustrate a transfer of different types of bindings between a single set of skis;

Figure 11 is a perspective view of two ships interlocking to form a carrying handle;

Figure 12 is a perspective view of one example of an assembled invention including ski, dock, ship, binding and boot and a generic locking mechanism between the ship, dock and ski so as to prevent the use of the invention by an unauthorized person;

Figure 13 is a perspective view of one example of an assembled invention in which additional surfaces have been installed that could serve as parameter-altering material sheets or commercially available plates;

Figures 14A and **14B** illustrate a locking configuration for lock fitting a ship to a dock and a ship to another ship.

Detailed Description of the Invention

Referring now to the figures of the drawing. The figures are not drawn to scale and features may be exaggerated for clarity. **Figure 1** provides a perspective view of one example of an assembled invention, and **Figures 2A-2E** provide a schematic illustration of this assembly. A generic dock **12** is permanently attached to a ski **10**. This attachment can be done at the time of manufacture of the ski or can be done by a ski shop or similar facility on a previously purchased ski. A generic ship **14** is loaded onto dock **12** and temporarily affixed with an attaching means **16**, such as screws, wing-nuts, releasable springs or other attachment devices known to those of ordinary skill in the art. A binding **18** that has been previously affixed to the ship is accessible to be loaded with a boot **20** once the ship has been attached to the dock. The attachment of the binding to the ship can be done at manufacture or on previously purchased equipment at a ski-shop or similar facility. Docks can be modified to accommodate ships of different sizes, and ships can be modified to accommodate bindings of different sizes. While not necessary, it is economically desirable for the mechanism that will hold the ship to the dock to be part of the ship. Although the ship can be any shape, for example rectangular, it is advantageous for the ship to correspond to the physical dimensions of an associated dock.

Figures 3 and **4** provide perspective views of two orientations for one type of dock. The dock forms a slot into which can be inserted a corresponding ship which can be then be attached with screws, wing-nuts, releasable springs or other attaching devices known to those of ordinary skill in the art via the overhanging portions of the dock. Docks can be configured to allow entry of a ship from only one direction or can allow for multiple access points. **Figure 3** shows an assembly in which the ship **24** is inserted lengthwise into the dock **22** in a direction perpendicular to the ski **10** (as shown by direction arrow **100**). Ship **24** and dock **22** have been designed to fit together in this embodiment. The ship **24** is attached to dock **22** by one or more attaching means **16**. In the embodiment shown dock **22** has only one open side configured to accept ship **24**. **Figure 4** shows an assembly in which ship **34** is inserted toe-first into the dock **32** in a direction parallel to the ski (as shown by direction arrow **102**). Again, ship **34** and dock **32** have been designed to fit together and are attached with attachment means **16**, e.g. screws, wing-nuts, releasable springs or other attaching devices.

Figure 5 is a perspective view showing a dock **12** into which a ship **14** can be inserted at some angle **110** and then rotated into position by means of the a rotation assembly **36** built into or part of dock **12**. Angle **110** can be anything from 0 degrees up to **180** degrees. Rotation assembly **38** is not affixed to the ski **10** like the rest of dock **12** but is free to rotate. The ship **14** can be attached to the dock **12** via an attachment mechanism **36** that locks down the ship **14** to the dock **12** during the process of rotation. Alternatively, the ship **14** can be attached to the dock **12** with the conventional attaching mechanisms **16** as previously described.

Figure 6 is a perspective view of a dock **12** which a spring-loaded attachment mechanism **46**. A ship **14** is inserted into the dock **12** and then attached via the spring-loaded attachment mechanism **46**. A release lever **44** is depressed to allow for the insertion or removal of the ship from the dock.

Figure 7 is a cross-sectional view of a ship **14** and dock **12** attachment enhancing surfaces **50** disposed on the surfaces that will be in contact after attachment of

the ship to the dock. Attachment enhancing surfaces **70** could be used to improve the attachment of the ship to the dock and include such possibilities as interlocking teeth, frictionally-rough surfaces, or other such surfaces that adhere to one another.

The present invention can be separately incorporated into currently existing bindings and skis or installed during manufacture as integral units. Figure 8A is a perspective view of a binding **28** that is integral to the ship and can be installed at time of manufacture. **Figure 8B** shows a binding assembly **38** that is attached separately from the ship and can be installed by a skier after manufacture at a ski-shop or other facility with a conventionally known attachment means **56**. **Figure 9A** is a perspective view of a dock that is integral to a ski and can be installed at time of manufacture. **Figure 9B** shows dock that is separate from a ski and can be installed by a skier after manufacture at a ski-shop or other facility by way of a conventionally known attachment means **66**.

It is also possible for a user of the transferable bindings to transfer different bindings to the same ski. **Figures 10A** and **10B** illustrates an example of such a transfer. As shown in **Figure 10A**, a skier, who wants to go both alpine and telemark skiing with a single set of skis, could insert into a dock **12** a ship **14** mounted with a set of alpine bindings **48** and alpine boots **40** and for the desired alpine skiing time. Later, as shown in Figure 10B, the skier could then remove the ship, boots and bindings with the alpine configuration and insert another (but same type) ship **14** mounted with a set of telemark bindings **58** and telemark boots **50** for the desired telemark skiing time. Such a system allows a user to transfer bindings quickly and even while on the ski trail or slope so long as the necessary ships, boots and bindings are carried or otherwise readily available.

To facilitate transportation, a skier could leave his boots in their bindings (which would be attached to his ships) and the two ships could be engineered to attach to one another thereby providing a single convenient carrying handle. **Figure 11A** shows two generic ships **14** with carrying handle **80**. **Figure 11B** shows the generic ships **14** interlocked to one another forming a combined carrying handle **82**. A variety of carrying handle configurations are possible and known to those of ordinary skill in the art.

Whether or not attached to each other or to the skier's boots, carrying bags or cases could be designed to accommodate ships.

Theft of skis is a serious problem. Easily removable ships would be a further enticement to thieves. To prevent theft, one or more locking mechanisms (by key, combination, electronic, or other system that will be apparent to those skilled in the art) could be employed. For instance, the dock could have a locking mechanism that when activated prevents all ships from entering (i.e. it blocks out ships). If this locking mechanism were difficult to disable, it would render the underlying skis virtually useless to a thief. Similarly, the ship could be locked to the dock and perhaps in addition, contain a blocking mechanism that, when engaged, prevents boots from fitting into the binding. If this were difficult to disable it would render the binding/ship/dock/ski virtually useless to a thief and would make it safer to leave skis (and their associated ships) unattended (e.g. at a lunch stop). **Figure 12** is a perspective view of one example of an assembled invention including ski **10**, dock **12**, ship **14**, binding **18** and boot **20** and a locking mechanism **90** between the ship **14**, dock **12** and ski **10**. The locking mechanism **90** can be any type of lock (e.g. key, combination, electronic) and installed on any side and in any position so as to lock the ship **14**, dock **12** and ski **10** together to deter theft or to otherwise disable or block entry of a ship **14** into a dock **12** or a boot **20** into a binding **18** so as to render the invention useless to an unauthorized person.

In the prior art, bindings have two components, one for the toe and one for the heel. Typically, the space between the two is customized to the skier's boot size at the time the binding is mounted to the ski. Bindings allow for additional fine adjustments after mounting. With the present invention, the space between the toe and heel pieces of the binding could be customized at the time the binding is mounted to the ship. Furthermore, the ship could be engineered (perhaps by multiple screw holes) to accept a range of spaces between the toe and heel pieces.

To facilitate the implementation of fine adjustments, the ship could be mounted to the dock of a ski or the ship could be mounted to a dock-like mechanism that is mounted

to a surface other than a ski. Note that the ship, dock, or a separately attached material sheet can be designed to potentially receive corrections for pitch, roll and yaw, and other parameters, as described in U.S. Patent Application No. 09/774,522 entitled "Method and Apparatus for the Customization of Boot Placement on Skis," the teachings of which are hereby incorporated by reference. In addition, commercially available plates can be installed between the ski and dock or between the dock and ship that alter the stiffness of skis or the height of the boot above the ski. **Figure 13** illustrates an assembled view of the invention in which additional surfaces **92** have been installed (between the ski and the dock and also between the dock and ship) that could serve as parameter-altering material sheets or commercially available plates.

Figure **14A** illustrates a locking configuration **94** for attaching by lock fit a ship **14** to a dock **12**. The locking configuration **94** can be manipulated so as to allow two ships **14** to be removed from their docks and subsequently lock fitted together with the same locking configuration **94**, as seen in Figure **14B**. The locking configuration **94** can be used in conjunction with the locking mechanism **90** (shown in Figure **12**) and the carrying handle **80** (shown in Figures **11A** and **11B**).

In one embodiment of the invention, ships and docks would come in a single standardized size. Alternatively, in another embodiment, ships and docks could come in a range of sizes and be sold as pairs (e.g. a sizes for children, women and men, etc.). Furthermore, docks could be designed to accept (or adjust to) ships of different sizes. Similarly, ships could be designed to accept (or adjust to) docks of different sizes.

Other embodiments of the invention will be apparent to those skilled in the art from a consideration of the specification or practice of the invention disclosed herein. It is intended that the specification and examples be considered as exemplary only, with the true scope and spirit of the invention being indicated by the following claims.

What is claimed is: